



UNITED STATES NAVY

# MEDICAL NEWS LETTER

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Captain D. R. Childs MC USN, Editor



Rear Admiral Edward C. Kenney MC USN  
Surgeon General, United States Navy



MESSAGE FROM REAR ADMIRAL EDWARD C. KENNEY  
SURGEON GENERAL, UNITED STATES NAVY

I have deliberately delayed in the preparation of this message to all members of the Medical Department, military and civilian, to give myself time in the new position to more closely explore the various phases of our total effort in providing medical and dental services to the Navy.

I subscribe fully to the concept that the Bureau of Medicine and Surgery is the central agency at the Seat of Government for the Navy Medical Department. Here, policies and programs are designed to best support the over-all mission of the Navy, our professional efforts are coordinated, and the tools, both personnel and material, needed by our field activities are provided. The demands for health services in a wide variety of fields is constantly increasing. Some activities are hard pressed to meet this volume of work and efforts have been made, and will be made in the future, to satisfy these requirements. In the meantime, every effort must be made to improve our management and to fully utilize in the most productive and efficient manner our present personnel and funds. Until this is accomplished in all areas, we are not in a strong position to request additional resources.

Surveying the present position of the Medical Department, I am impressed with the changes and improvements in the practice of medicine and dentistry, and the progress of the allied sciences which have taken place in the Navy, particularly during the past 15 years. It is obvious that this situation is a reflection of many factors, not the least of which is the emphasis which has been placed on educational and training projects in all Corps and at all levels. The result has been of considerable benefit to patients in our dispensaries and hospitals. They have been given the advantages of the latest and most advanced technics of treatment and well motivated and competently trained personnel to provide and administer that care. It is not the patient alone who has profited; the fact that the Navy man and his family have been better cared for has contributed materially to the Navy in strictly operational areas.

None of the aspects of the mission of the Medical Department have been neglected. Problems incident to

new and complicated weapons systems, unique requirements of high performance aircraft, special factors associated with prolonged periods in a closed environment—many environmental and human factors incident to these rapidly advancing systems have been studied by the Medical Department, with important contributions resulting from such studies.

The more traditional problems of field medicine have not been neglected—close liaison and work with Headquarters, Marine Corps has been maintained. Research personnel have continued to inquire into such areas as new equipment, treatment technics, first aid procedure, and preventive measures which are unique and particularly applicable to Marine type operations. The Field Medical Service Schools have continued effective training of personnel to provide medical support to this vital arm of the Navy.

Many units of the Medical Department have studied and developed methods of sanitation and prevention of certain epidemic and insect-borne diseases which might affect the efficiency of the fighting forces of the Navy. Continuing exploration and development has been evident in many areas, too numerous to specifically mention here.

These reflections all point to the essential fact of participation of all Corps and all personnel in research and operational medicine as well as patient care. This cooperative feature was repeatedly emphasized by my predecessor, Admiral Hogan, who stressed that the complexity of modern-day patient care and the problems in operational medicine require the utmost in teamwork, influencing all disciplines in all Corps.

Recognizing the present status of the Medical Department, I personally feel that the programs and policies in effect at this time are so sound and successful that no radical change is required in the immediate future. However, the Bureau of Medicine and Surgery, as well as all personnel, would like to feel that change is inevitable. Progress is only made by change; nothing is accomplished by complacency. I feel confident that the Navy Medical Department will always explore and adopt new procedures and change



current practices to the end that the highest quality of medical service will be available to Navy personnel, their families, and others entitled to care. Change is not desired just for the sake of change, but we must constantly be alert for new and improved measures for performing our mission.

In order to perpetuate and expand advantages gained in recent years, emphasis will be continued on education and training of all personnel and support will be given to research and investigation in as many areas as possible. It is recognized that only by means of training and research will better answers be found for the problems that face Navy Medicine as well as the world of medicine.

In addition to aspects specifically mentioned, continued efforts will be made to make a career in the Medical Department of the Navy more desirable from a professional as well as a personal standpoint. By making a career more attractive and thereby reducing attrition, it is recognized that greater service can be rendered to the Navy, and all medical care can show continuing improvement.

Continued emphasis will be made in budget preparation and presentation to provide funds for essential maintenance and equipment replacement.

Residency training in both medical and dental clinical specialties should continue at about the present level to satisfy future requirements. Improved methods of recording and evaluating the qualifications of applicants will be sought in an earnest effort to place

in residency training those best qualified and motivated. Other things being equal, it is believed that an operational assignment provides a most valuable experience following internship and prior to commencing residency training.

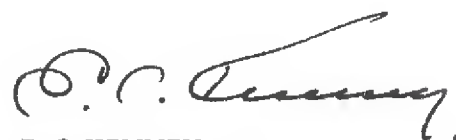
Training in the military medical specialties of aviation medicine, submarine and diving medicine, public health, and field and environmental medicine will receive added emphasis and importance in meeting operational requirements.

A careful analysis of hospital operation will be made and perhaps a major change will result. In the interest of optimal utilization of nursing personnel, the concept of minimal-intensive therapy areas appears to have real merit, even though it disrupts the departmentalized grouping of patients. Many new hospitals are incorporating this concept in their design, and reaction has been generally favorable.

Outpatient departments will be strengthened to permit more extensive diagnostic study and intensive treatment of those patients, both military and civilian, in need of medical care, but not requiring hospitalization.

Throughout the wide spectrum of medical and dental activities, we will not lose sight of our primary and fundamental mission and purpose of protecting the health of the Serviceman, and promoting his physical fitness wherever he may be stationed.

I am confident that Medical Department personnel are not in disagreement with these principles and goals and will give their support and cooperation.



E. C. KENNEY  
Rear Admiral, MC USN  
Surgeon General, U. S. Navy



### The Military Physician's Role in Medical Progress

Detlev Bronk PhD, President, National Academy of Sciences, Washington, D. C. Address, Annual Meeting of the Association of Military Surgeons of the U.S., 31 October 1960. Milit Med 126:8-11, January 1961.

All too seldom it is realized that some of the greatest scientific discoveries have had a military origin and emphasis. Leonardo certainly carried on a great many of his investigations which laid the foundations for much of modern science because of his need for development of military technology. Much of the incentive for scientific endeavor has been that of military need; much of the support of science has been provided because of hoped-for contributions of science to military strength.

Considerable thought has been invested in an effort to resolve the question of how science, which is directed to the furtherance of human welfare, should be so intimately associated with the arts of war. This relationship of science, which supports military effort that is devoted to the furtherance of evil ends or defense against inimical forces, but which, in itself, is a means for enriching the life of mankind, provides one of the great troubling ethical dilemmas of science.

"Today, man stands helpless but for the onslaught of science," was the recent thought of a prominent New York politician. Such an apparent conflict between the creative and the destructive forces of science is especially relative to the functions of the military surgeon. Much of his role is concerned with the preservation of life in a conflict wherein life is being destroyed. The obvious easy answer to this ethical dilemma is that science is knowledge and understanding. Man uses knowledge as he will for good or evil purposes, for wise or foolish ends, for creation or destruction, for a desirable or an asserted life.

A great, but too little recognized, role of the military surgeon is his emphasis on the human potentialities of science; his emphasis is on these despite the fact that he is involved in what is, of necessity, furtherance of the means of man's survival against the evil forces and inhospitable environment in which man is thrown. That the military surgeon is able to reserve a lively concern for the welfare of man, despite the fact that he is engaged in a section of society which is concerned with destruction of man, is evident through his services to friend and foe. The military surgeon conserves life; man must decide how he will live.

Consideration of this function of the military surgeon and physician to the role of the surgeon and physician in times of peace may be extended. Again, the physician is a conserver of man's ability to live. The widening scope of medical knowledge enables the physician to reassert his traditional role as a guide and determinant of how man lives. Yet, to increase the number of man's days between birth and death is not necessarily increasing



the days he truly lives. For many, the long span of years between birth and death is but a longer span for mere survival without the satisfaction of a creative life that distinguishes man from all other of God's creatures. The eternal challenge man faces was given to Job when the voice out of the cloud said, "Hast thou understanding?" So it is that the real reason for scientific inquiry is that man is that one among all of God's creatures who has the power of understanding.

Man does not fulfill his spiritual destiny by merely existing while protected against the destructive forces; nor do men fulfill their rightful destiny if some use knowledge to gain selfish ends by suppressing others who have less knowledge. In these days of rapidly evolving science with consequent new powers for the greater expression of a more vital rewarding life, we need more persons who, like physicians, devote themselves to enabling man truly to live and to do more than merely survive.

Let us consider the role of the machine. A machine is a device to enable man to do what he cannot do by the unaided natural powers of the body and senses. Through instrumentalities, it is now possible for man to hear what he cannot hear unaided, to see what he cannot see unaided, to think thoughts that he cannot think unaided. All of the machines which extend the powers for exertion of forces which the human body unaided cannot exert give to man great new powers. But how often in modern society is the development of these forces guided wisely with regard to the powers and characteristics of the human organism?

There are few who ride across the continent and the seas in pressurized cabins who think back or even stop to wonder how it is that the pressurized cabin was developed. Nor do they pay respect to those of the Air Force who developed this means so that all men can travel safely and rapidly at higher altitudes and in greater comfort.

The fact that man can now see into far outer space, to distances never made possible before because of development of radio-astronomy is another brilliant example of how the powers of man have been greatly extended. This development has been stimulated by the needs of the military forces of this and other countries. Speed of movement, capacity for thought, ability to think as man has never been able to think before—through digital and analogue computers—are mere examples of what can be multiplied endlessly, and of how the union of the physician and the engineer can create a more desirable way of life despite the fact that we surround man more and more with man-made conditions which so often are unfavorable to life. The military surgeon has recognized the need for this partnership, partly because he is so often suddenly confronted with new instrumentalities for offense and defense which cannot be used unless redesigned, unless the gap between the new instrument and the environment is bridged by secondary devices that enable man to use what he creates.

Despite our impressive advances, man has far to go to diminish the contrast between what man can do to make possible greater powers, greater



experiences and greater capacity to live, and what he really does. Man can do better by his fellow men if he will. As stated by Edwin Markham, "Why build these cities glorious if Man unbuilded goes? In vain we build the world, unless the builder also grows."

If the military surgeon can guide the developments of weapons so that they can be used, and if he can build an environment in which life can be lived, why can we not have a similar association between the physician, engineer, statesman, politician, and city administrator. We can if we will. What we need is wisdom to deal with knowledge and the spirit of human consideration for others which is the primary role of the physician, be he military or civilian.

We should have noble aspirations, not only for ourselves but for all people. We are men. Man—that one among all God's creatures who has the power of understanding the rights and needs of others. Only so, can we go forward to that day when the military surgeon will not be the military surgeon he is today, but the military surgeon who fights not other men, but the forces of ignorance and prejudice; and who adapts man not to a hostile environment, but to the natural environment in which he can always learn to live in peace and accord.

The greatest role of the physician may be reflected in the words of benediction given recently by a clergyman, "Give us wisdom to deal with knowledge." To this might be added, "Help us to use our knowledge wisely."

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#### Mumps Virus and the Central Nervous System

Werner Scheid, Universitäts-Nervenklinik, Köln-Lindenthal, Deutschland.  
World Neurol 2:117-133, February 1961.

Mumps virus produces a generalized infection in a susceptible individual which can result in various fluctuating and serious symptoms. Sometimes, overt symptoms of illness are lacking; however, development of antibodies does occur. In instances of subclinical infection, if the structure involved is the central nervous system, it is necessary to use clear-cut serologic criteria to establish the basic cause of the illness.

Because the disease is a generalized infection there is no reason to attribute neurologic symptoms to complications during the course of mumps as is frequently done. The same holds true for pancreatitis and orchitis. Parotitis might well be considered a complication of mumps.

Incidence of Neurologic Symptoms. If neurologic symptoms appear in the course of mumps, the greatest number of cases will be meningitis and, rarely, meningo-encephalitis. Marked encephalitic syndromes are usually exceptional. To the present, few cases of myelitis and polyneuritis could be attributed to mumps.



The frequency with which central nervous system involvement has been observed varies from report to report, from rare to 30% or 40%. The widely varying data have been attributed to the individuality of mumps epidemics. However, a greater or smaller susceptibility of the population might also result in a variable frequency of neurologic syndromes.

Most authors assume at present that the etiologic agent sometimes displays an attenuated, and sometimes a much more marked, neurotropism. This conclusion cannot be accepted on the basis of present information. Orchitis and epididymitis occur at a rather consistent frequency; therefore, it would be surprising if the mumps virus were to behave conservatively in this respect, but were to alter its tendencies with respect to the nervous system. It would seem more likely that the meningeal symptoms are frequently insignificant, ignored, or minimized in the face of the remainder of the symptom complex, particularly orchitis.

The frequency with which a mumps infection causes meningitis and encephalitis with and without a glandular disorder can be proved only by way of systematic clinical and serologic examinations. A comparison of several epidemics would disclose a constant or varying tendency of the mumps virus with regard to the nervous system.

Mumps Virus and Biologically Immune Reactions. For routine diagnostic purposes, the complement-fixing antibodies have been demonstrated. Generally, two types of complement-fixing antibodies appear, one of which reacts with a soluble antigen (S-antigen), the other with a virus-attached antigen (V-antigen). The antibody directed against the S-antigen usually appears very early—often a few days after the first clinical symptoms set in—while the other antibody frequently appears a little later and then rapidly reaches high titer values which gradually decrease. After most cases of mumps, the V-antibodies remain and, despite the low value of the titer, are consistently detectable over many years. The antibodies directed against the S-antigen frequently disappear from the serum after a few months.

The red cell agglutination-inhibiting antibodies are not identical to the complement-fixing antibodies, even though they appear equally as early as the S-antibodies and attain equally high titer values. Clinical application of this determination is not practical because of nonspecific inhibitors.

Neurologic Aspects of the Disease. In mumps, even though the symptoms of the particular organs do not appear in any regular order, certain clinical presentations are more common than others. When parotitis and neurologic symptoms are concerned, in most cases symptoms of meningitis and encephalitis will follow those of parotitis, usually between the third and sixth day. Rarely will the symptoms appear simultaneously; only sporadically will mumps start with meningitis or encephalitis to be followed later by parotitis.

Neurologic symptoms correspond generally to those of mild bacterial meningitis. Headache, nausea, vomiting, and more or less pronounced neck



stiffness are the most frequent manifestations of the meningitic syndrome. Especially in children, this will result not infrequently in a dulling of consciousness with drowsiness. Rarely do delirium or other manifest psychotic symptoms develop.

Cerebrospinal fluid anomalies are the same as those accompanying most other abacterial meningitis cases. Extent of cell increase is not intimately related to gravity of the clinical picture. Most of the time during frank meningitis, about 100 cells—rarely more than 1000 cells—are counted. The protein content of the cerebrospinal fluid remains normal or rises only later, similar to poliomyelitis. Pellicle formation has been observed repeatedly, unfortunately causing cases to be mistaken for tuberculous meningitis. The same cerebrospinal fluid anomalies may be observed in mumps cases without the clinical symptoms of meningitis.

Even sudden and alarming meningitic symptoms may disappear in a few days. When serious and persistent symptoms with pronounced dulling of consciousness or cerebral involvement occur, the diagnosis of meningoencephalitis may be made. Monoparesis or hemiparesis is an exception, as is paralysis of one or more cranial nerves. Some reports describe isolated cases with very complex symptoms of serious encephalitis. Generally, the dangerous symptoms clear rapidly and completely.

The question concerning the clinical deficit of mumps meningitis and mumps encephalitis cannot be answered unequivocally. Retrospective investigations to date allow the conclusion that, aside from the well-known auditory disturbances, milder psychologic changes and neurologic and endocrine symptoms may frequently be seen. However, the relationship does not seem to be assured except in the cases of hearing loss and deafness.

The causation of mumps meningitis and encephalitis has puzzled many. However, it is currently considered that the central nervous system symptoms are the expression of direct viral involvement. Many authors assume that there is a parainfectious encephalitis apart from the common viral mumps involvement. Such a neuro-allergic late form does not seem to be substantiated. Findings do not justify the assumption that there are two pathogenically differing forms of mumps encephalitis.

Polyneuritic and Myelitic Syndromes. Mumps infection resulting in polyneuritic and myelitic syndromes are rare. Frequently, all signs of meningeal involvement or even encephalitis will be lacking. Pathogenesis of this involvement is still completely obscure. The first possibility is a direct action of the mumps virus. However, another etiologic agent activated by the mumps infection might be responsible. Furthermore, the possibility of a neuro-allergic reaction also exists. Finally, a chance temporal relationship between the alleged mumps infection and the neurologic affection is possible.

Mumps Infections and Prenatal Damage. Many observations cause a suspicion that the mumps virus brings about prenatal disturbances similar



to those resulting from other kinds of infections suffered during pregnancy. Consequently, different kinds of deformities in children whose mothers had mumps during pregnancy have been observed. The number of cases of this kind is, however, still small. Further systematic investigations are necessary to estimate the significance of the mumps virus on the appearance of such prenatal damage and, if the connection is certain, to ascertain the time of particular danger. Important basic work can be the forerunner of prophylactic precautions.

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### Athletics and the Child

R. A. McGuigan MD, 723 Elm Street, Winnetka, Ill. Arch Pediat 78:43-47, February 1961.

Because of the emphasis by physical educators on fitness of children, and because much of this emphasis has been of too narrow focus and too vociferous a nature, pediatricians have repeatedly demanded to know what these people mean by fitness. "Fitness for what?" Fortunately, fanatics who previously thought only of muscular strength and paid no attention to the consideration of total fitness are no longer heard; a more mature and calm group are the majority now. Emphasis is on physical well-being as a part of general fitness for life with all its stresses—physical, emotional, and social.

Where greater attention by the pediatric profession is needed, however, is in the field of competitive athletics. Emphasis on this program has come for the most part from well meaning but misguided lay people. As a result of wide publicity emanating a few years ago to the effect that many of our children were so physically unfit that they were in serious danger of not being able to cope with the necessary demands of everyday life, many lay people became unnecessarily alarmed. This led to a great drive to provide more physical activity for children, to encourage athletics. An unfortunate result has been undue emphasis on competitive athletics.

Competition is, of course, a built-in part of modern life. Particularly to a child, competition is an everyday affair. He competes from the day he is born—against nature, his parents, his siblings, his fellows, and society itself. Therefore, added competition is quite frequently not only unnecessary but inadvisable.

With this mistaken approach, greatly increased emphasis on competitive athletics has developed; this is almost entirely shown in the form of organized football and baseball. Football is probably one of the least suitable, desirable, or beneficial of team games, and certainly is one of the most hazardous. When football leagues are being organized to promote this game for children of eight years and up, and when these games are played on a scheduled basis, something is wrong. Usually, the physical educators are



not at fault—they would much prefer to handle children of this age on a non-competitive basis with emphasis on activities which teach and develop fundamental skills and coordination.

All physicians see frequent injuries from football; all know of others. But no statistics are as yet available, and the lay individual, convinced of the importance of competitive athletics, does not readily accept what he considers to be only a wrong opinion voiced by a person he thinks too ready to coddle and protect the growing child.

The Wisconsin Medical Society made a study of insurance claims under the state-wide compulsory high school athletic insurance program. It showed 3984 of 6200 injuries were due to football in a single year. The severity of these injuries is demonstrated by the fact that the cost of these was two-thirds of all the insurance costs combined, and four and one-half times as much as those from any other single activity. One company reported that football in 7th, 8th, and 9th grades accounted for 50% of junior high school athletic claims, although only 10% of junior high school youngsters took part in football. Another company stated that in 46,000 claims they found the younger the player the more likely he was to be hurt. The incidence of athletic injury in junior high school students was five times that of the 18-year olds.

Such figures as these are sobering. When future disability liable to result from fractures involving the epiphysis in these youngsters is considered, the case against football below high school age becomes serious indeed.

A common fault among non-professionals is failure to realize the difference between children and adults. The average person thinks that children are quick, agile, react quickly, and can therefore play games safely even though not experienced. This is, of course, a fallacy.

Overemphasis has been one of the worst features of the football program in this country. If college football is overemphasized for whatever reason, it does not follow that this emphasis should be passed on down even into junior high school.

As workers for the welfare of children, pediatricians are, and should be, interested in everything pertaining to development of the child into a healthy adult. This means encouragement of physical activity rather than protecting the child against all harm. The pattern of adult life is laid down in childhood, and if a love of physical activity and well-being is not developed in the child, there will not be that well-being in adult life.

Competitive athletics is not the way to instil a love of playing in the child. Competition is perhaps the most serious deterrent to development of a physically active population. Disappointment is not often a motivating influence to a child. Whenever competitive team games are promoted, far more children will be left out than included. These "outsiders" are precisely those who should be receiving the attention without which they are likely to become life-long spectators rather than players.



Physicians can do a great deal to reduce the emphasis on competitive athletics and to increase the physical health of the people. The ideal of greater physical activity for children can be stressed at every opportunity. The playing of games which can be continued in adult life can be urged. The tendency to develop "varsity" type teams in the ages below high school can be deplored. Spectator sports should be deemphasized; participation should be encouraged.

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#### Time for Reevaluation of Hemostatic Agents

Charles C. Sprague MD, Tulane University School of Medicine, New Orleans, La. Editorial, Arch Int Med 107:4-5, January 1961.

Perhaps no other single mode of therapy is applied with such empiricism and as illogically as administration of hemostatic agents. This criticism does not apply to administration of specific therapy where the diagnosis has been established, such as use of antihemophilic globulin in a patient with hemophilia. Rather, it is directed to the inappropriate use of an ever increasing number of hemostatic agents, some of which would seem to have little chance of providing significant benefit to the patient.

It is understandable that the physician faced with the problem of severe hemorrhage of unexplained etiology will resort to any therapeutic measure that may be beneficial no matter how empirical the approach. Unfortunately, and at times inexcusably, this approach to therapy often precedes an adequate appraisal of the hemostatic mechanism in the bleeding patient. It is unfortunate that hemostasis is such a complex mechanism. Yet, it is not sufficiently complicated that a physician must throw up his hands in despair of a diagnosis when his bleeding patient has a normal bleeding and clotting time, and then proceed with empirical therapy.

Because most patients with a serious defect in hemostasis will probably have had some evidence of abnormal bleeding in the past, the medical history is valuable and may prove to be more informative than the conventional bleeding and clotting time. This is particularly true when the bleeding time consists of a finger stick and the clotting time is done by the capillary tube method. These two methods are essentially without value and are more apt to mask a significant defect than to reveal it. Rather, three simple tests are suggested: (1) tourniquet test with blood-pressure cuff inflated to a pressure midway between systolic and diastolic blood pressure, (2) one-stage prothrombin time, and (3) prothrombin consumption test. The latter test is recommended rather than the clotting time, inasmuch as it is much more sensitive in detecting hemorrhagic states which are apt to be associated with a prolonged clotting time.



The pharmaceutical industry has bombarded the profession with a vast array of hemostatic agents. On occasion, some of these agents are effective to a variable extent. But both recently introduced and existing agents need further controlled evaluation than now exists. It is a common impression that preoperative administration of vitamin K minimizes bleeding in patients undergoing tonsillectomy; many physicians prescribe the drug routinely as a prophylactic measure. It is possible—although currently unproved—that vitamin K does have a nonspecific hemostatic effect in the normal person.

Although colleagues in other specialties are the chief dispensers of hemostatic agents, it would seem appropriate that the internist lead the way in an attempt to clarify this problem. Until such time as more definitive studies are available, it would behoove the individual physician to be more critical in his appraisal of this form of therapy.

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Urinary Abnormalities  
From Overuse of Muscles

John H. Arnett MD and Kenneth D. Gardner Jr MD, Health Service  
of Drexel Institute of Technology, Philadelphia, Pa. Amer J Med Sci  
241:55-58, January 1961.

The aches, stiffness, and discomfort which may follow muscular exertion are well known; the chemical and physiologic processes involved in their production are largely unknown. In human beings, horses, dogs, and doubtless in other animals, overuse of unconditioned large muscle groups may lead not only to the usual symptoms, but to actual muscle swelling and tenderness, and in the case of horses, to irreversible changes. In both human beings and horses, especially following periods of muscular inactivity, overuse of powerful muscles may also result in proteinuria, cylindruria, hemoglobinuria, myoglobinuria, and hematuria. The cause of this phenomenon also remains a mystery.

Increased amounts of albumin, casts, and red blood cells were first observed 50 years ago in the urines of athletes. In recent years, interest in this phenomenon has been revived. It has been pointed out that the urinary sediment changes following participation in football could resemble the sediment found in patients with acute glomerular nephritis. Furthermore, it has been found that these urinary sediment abnormalities are not dependent upon bodily contact for their appearance. Data have demonstrated that urine sediment abnormalities are related to the degree of exertion expended by each individual.

Some speculation has been made as to mechanisms of production of urinary abnormalities observed. During exercise, the renal plasma flow



decreases and endogenous epinephrine is released; both of these factors might result in temporary renal anoxia and consequently lead to appearance of urinary sediment abnormalities. Increased amounts of protein in the urine may appear because of fall in urinary pH accompanying aciduria following physical exertion. Myoglobinuria and hemoglobinuria may be due to the release of myoglobin from the muscle or to the breakdown of red blood cells within muscle substance, or to a combination of the two.

The authors present a case history of a young man who, about 24 hours after performing 150 to 200 deep-knee bends, began passing brown urine loaded with dark granular casts and leukocytes and which gave a strongly positive test for hemoglobin. Prompt disappearance of all urinary abnormalities coupled with lack of other clinical evidence in support of active renal disease led to the conclusion that no permanent kidney damage had been sustained.

Apparently, no fatalities have been recorded associated with hemoglobinuria or myoglobinuria of athletes, although in horses suffering from hemoglobinuric or myoglobinuric paralysis, a mortality rate of between 20 and 70% is reported, and fatal paralytic myohemoglobinuria has been reported in man.

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#### Experimental Hemorrhage

Dalton Jenkins MD, Masaaki Hataya DVM, Thomas Marchioro MD, Vernon Montgomery MD and Henry Swan MD, University of Colorado School of Medicine, Denver, Colo. Arch Surg 82:49-55, January 1961.

In 1895, Starling stated, "There are . . . certain facts which . . . prove conclusively the absorption by the blood vessels of the fluid in the connective tissue spaces. If an animal be bled to a certain amount, the remaining blood very shortly afterwards is found to be more dilute than before." Adolph and Lepore confirmed the occurrence of plasma dilution following acute hemorrhage and concluded it was primarily due to the fall in arterial pressure. Subsequently, other work demonstrated a relationship between blood pressure and plasma dilution.

The authors undertook to assess the effect of hypotension on fluid shift occurring during, and immediately after, hemorrhage, using splenectomized dogs as subjects. Their results demonstrate that during arterial hemorrhage in the anesthetized animals, the extent of plasma dilution is directly correlated with the degree of hypotension induced. If it can be assumed that as mean arterial pressure falls in response to bleeding there is a greater decline in pressure in the arterial segment of the capillary than in the venous segment, this circumstance would lead to a decrease in the rate



of plasma filtration with relatively constant reentry of tissue fluid into the venous portion of the capillary. These events could produce a net increase in movement of fluid from the interstitial space into the vascular compartment, resulting in plasma dilution.

While other factors must undoubtedly be involved, the direct correlation observed between plasma dilution and the degree of blood pressure fall strongly suggests that changes in mean arterial pressure exert an important influence on the maintenance of plasma volume. This influence of the mean arterial pressure may be exerted through some other factor (e.g., capillary pressures) directly concerned with the flux of fluid into and out of the vascular compartment.

The authors' original conception was to slowly produce larger arterial hemorrhage so as to prevent any significant decline in blood pressure. Although this was not accomplished consistently, the relative stability of blood pressure in the animals was impressive. Approximately one-fourth of the total blood volume was removed during a period of 2 hours before mean arterial pressure showed a progressive significant fall. Only minor changes occurred in the virtual plasma volume until the blood pressure began to decline. The temporal correlation between blood pressure fall and plasma dilution suggests that the latter is—at least in part—controlled by changes in mean arterial pressures.

These studies illustrate clearly a well-known clinical lesson: hypovolemia—particularly that which is produced slowly—may occur without a significant decline in blood pressure and without the anticipated compensatory movement of fluid into the vascular tree; under these circumstances, a relatively minor further fall in blood volume may suddenly induce severe vascular shock.

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#### Infection in the Operating Room

John M. Beal MD and Peter Dineen MD, Department of Surgery, The New York Hospital-Cornell Medical Center, New York City. Editorial, Amer J Surg 101:141-142, February 1961.

Virtually all (surgical) wound infections have their inception in the operating room. Concern about the occurrence of bacterial populations resistant to antibiotics has stimulated resurgence of bacteriology in surgery. Many reports have been devoted to individual areas of particular concern—air-borne contamination, ultraviolet lights, solutions to disinfect operating room floors, special masks, impervious drapes, surgical technic, et cetera. Studies of these areas are important when adapted to the over-all care of the patient and the particular operating suite.



Perhaps the most important result that has emerged from studies of surgical infections has been emphasis on surgical technic. It is apparent that the patient must not be weakened unduly by treatment. Inadequate hemostasis and crushing of tissue cannot be counteracted by ultraviolet lights or by antiseptic agents that reduce the bacterial count on the surgeon's hands.

Frequent review of measures that are being used in the operating rooms are needed. Analysis of the effectiveness of technic must include consideration of housekeeping and maintenance. Failure to keep a vigilant watch may be followed by an epidemic of infections. Actual inspection of the operating rooms and surgical areas of the hospital by a team of surgeons, nurses, and administrators has been found to be an effective method of maintaining standards of asepsis and of coordinating improvements when indicated. It must be kept in mind that the surgical patient is a weakened host in a potentially dangerous environment.

Regardless of restrictive steps and physical modifications, ultimate responsibility rests upon the surgeon. The most important factor in control and prevention of infection is the education of the surgeon—intern, resident, and senior surgical staff. A review of infections and frank evaluation of their pathogenesis is needed. Repetition of these and other aspects is a necessity for indoctrination in the principles of control of infection in surgery.

One of the most interesting facts that have been brought forth by laboratory studies is that a similar bacterial inoculum in several wounds does not uniformly result in clinical infection. Therefore, it is apparent that there must be local factors in the wound which influence development of infection. This emphasizes the important role of the surgeon's technic. Infection is less likely to develop if the wound is made as unreceptive to bacteria as possible. Since viable tissue successfully resists infection, while ischemic and necrotic tissue encourages infection, gentle and meticulous handling of tissues is essential at all times.

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Diagnostic Sign of Pilonidal Disease. During 1958, in U. S. Naval Hospitals, 99,426 sick days were accumulated because of treatment required for pilonidal disease; the expense for hospitalization alone was approximately two million dollars. Studying a large series of patients with and without pilonidal disease, the author noted that excessive hair on the glabella—the area between the supra-orbital ridges or the eyebrows—constituted a significant sign which is helpful in detecting individuals with the condition. If individuals with this sign were more carefully examined at the time of enlistment, it is conceivable that a great saving in time and expense in management of these cases could be achieved. (CDR P. Sebrechts MC USN, Dis Colon Rectum, January-February 1961)

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## MISCELLANY

### World Health Day

World Health Day—April 7—is the thirteenth anniversary of the World Health Organization, a specialized agency of the United Nations with a membership of 109 countries and territories. Since 1948, WHO has attacked disease and epidemics everywhere and focused attention on health problems still requiring solution. World Health Day each year is marked by emphasis on a major health problem.

In a message from the Surgeon General of the Public Health Service, Department of Health, Education, and Welfare, the theme for 1961—Accidents Need Not Happen—is stressed. He points out that the topic is of particular significance in the United States where accidents are the fourth leading cause of all deaths and the first among persons aged one to 35 years. People in this age group are in, or coming into, their most productive years. Yet, every year, 35,000 of this group die of accidents, in addition to 55,000 in the other age groups. Almost 47 million other Americans are injured accidentally every year; many of them are confined to bed for life, many others dependent on wheelchairs or crutches.

"Need we go on year after year paying this toll?" the Surgeon General asks, "Or shall we join together to reduce accidents?" Continuing, he declares, "The answer lies in our hands. On this World Health Day, I ask you as an individual and as a member of a health profession, to consider the part you can play in this important task that lies ahead." (PHS, DHEW)

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### Admiral Burke Reelected President of Navy Mutual Aid Association

The Board of Directors of the Navy Mutual Aid Association at their Annual Meeting on 17 February 1961 announced that Admiral Arleigh Burke USN had been reelected as President. Admiral Burke, a member of the Association for over 30 years, thus starts his seventh term as President. Other officers elected by the membership include CAPT P. R. Engle MC USN, Vice President-Medical Director. The Board of Directors reappointed as Secretary and Treasurer, CAPT T. S. Dukeshire SC USN (Ret), and as Assistant Secretary and Treasurer, LCDR M. E. Koepke MSC USN (Ret).



Admiral Burke, in a brief acceptance speech, noted that Navy Mutual Aid has doubled its assets and tripled its membership in the past 7 years. (Assets now exceed \$49 million and membership is more than 31,000.) Also, he noted with pleasure that the purchasing power of the widow's benefit has been protected by payment of the terminal dividend, now making the total benefit \$10,000.

Remarking on the responsibility to the 31,000 service families who turn to Navy Mutual Aid for its unique services in time of distress, the many favorable reports received were pointed out by Admiral Burke as indicating these services have been furnished in a prompt and capable manner with a personal interest in the members and their problems.

CAPT Dukeshire reported that, in addition to the vigorous membership and financial growth, the net investment income on the Association's high grade bond portfolio continued to increase, and that operating expenses were maintained at 2-1/2% of income. (NMAA)

NOTE: Information as to the benefits from membership in this Association—which includes low-cost insurance available while on active duty and continuing in effect after retirement or release from active duty—may be obtained from your Commanding Officer or a Nonresident Director of the Association at your command or in your area.

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#### Guantanamo Naval Base Gives Medical Aid to Cuba

The U.S. Navy, the American Red Cross, and the Cuban Red Cross combined efforts in a three-way drive to combat a polio outbreak in early March in Guantanamo City, Cuba, some 31 miles from the U.S. Naval Base at Guantanamo Bay. Miss Dorothy Duval, American Red Cross Director at the Naval Base, received a telephone call from Mr. Larry Phillips, a male nurse with the Red Cross in Guantanamo City. He told her of a polio outbreak in the city which left 3 children dead and 10 more stricken.

Because all available vaccine had already been used by the various hospitals in Guantanamo City, and previous search through Cuba by telephone for additional supply had proved of no avail, Phillips urgently requested aid in getting enough vaccine for at least 100 more children. In turn, Miss Duval called upon the Commanding Officer of the Hospital on the Base, who got permission from the Base Commander to send all vaccine that could be spared. Soon, Miss Duval was speeding towards the Base's northeast gate with enough vaccine for 160 inoculations. Here she met Phillips and turned over the vaccine to him, with an offer of any additional help he might need.

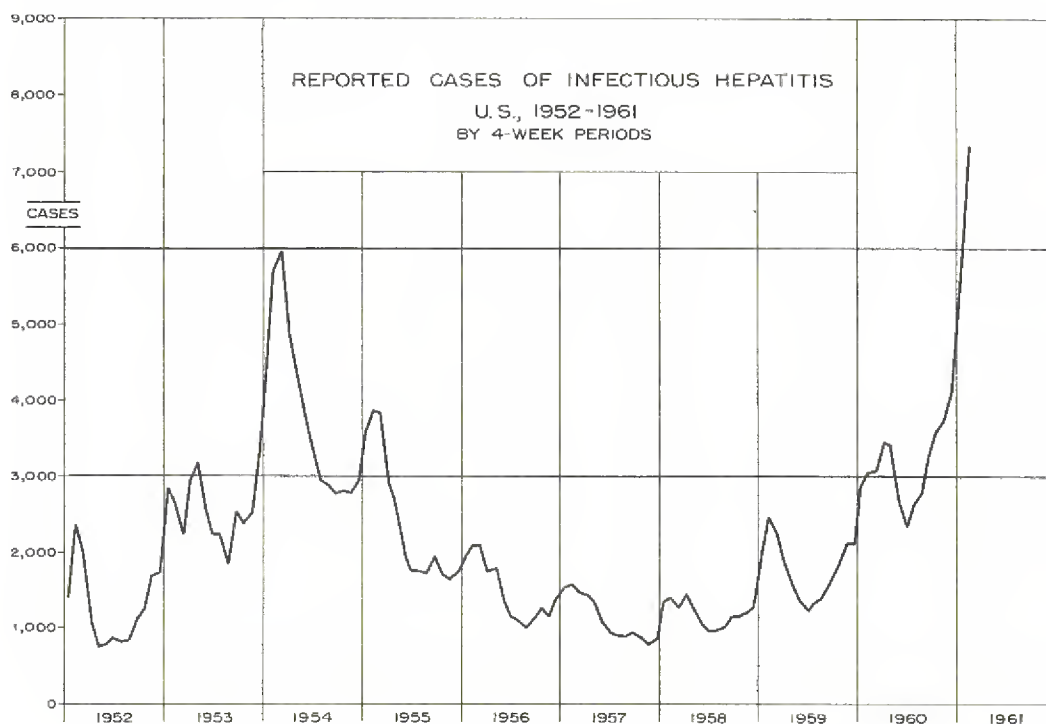


Although the Cuban employees on the Base come and go daily, this was the first instance since the breaking of diplomatic relations in early January that any call for assistance had come from Cuba to the Base. In connection with the assistance, Admiral O'Donnell, the Base Commander, said: "We are delighted to help our neighbors here in Cuba who have been our friends for a great many years. It is the tradition of our country and its Navy to lend a hand whenever needed." (IRD, USNOI)

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#### PHS Report on Hepatitis

In recent issues of Morbidity and Mortality Weekly Report of the Public Health Service, the high incidence rate of hepatitis is shown to be continuing. The graph (17 March 1961) shows reported hepatitis cases in the United States by 4-week periods since 1952. The recent period ending 25 February continues a steep ascent. The 1961 cumulative total for the 10-1/2 week period ending 11 March is 17,472 cases which is more than double the 7332 cases reported during the comparable period one year ago, and considerably above the 12,842 cases in 1954, the last national hepatitis peak. For the week ending 11 March, cases reported totaled 1930, a slight decline from 2091 reported the previous week.





From the Note Book

New Submarine Escape Depth Record. A new depth record for submerged submarine escapes was set by the Navy on 3 March 1961 in waters off Key West, Fla. Utilizing a new hooded device designed by LT Harris Steinke USN, CDR Walter Mazzone MSC USN and Steinke simulated an actual escape from the submarine USS BALAO, ascending from a depth of 318 ft to the surface in 55 sec. The previous record of 302 ft had been set on 1 October 1959 by CDR George Bond MC USN and EMC Cyril Tuckfield USN. The escape device consists of a standard Navy inflatable life jacket with a rubberized fabric hood fastened to it. Relief valves are located in the collar and so arranged that expanding air from the life jacket fills the hood and allows normal breathing during ascent. CDR Mazzone is attached to the Medical Research Laboratory and LT Steinke is OIC of the Submarine Training Tank at the Submarine Base, Groton, Conn. (TIO, BuMed)

Forensic Sciences Symposium. The Third Forensic Sciences Symposium, to discuss problems of mutual interest to medical, legal, and law enforcement officers in the Armed Forces, other governmental agencies, and the civilian community, will be conducted at the Armed Forces Institute of Pathology, Washington 25, D. C., 2 - 4 May 1961. The symposium will be composed of lectures, panels, demonstrations, and other scientific methods used in criminal investigation. The symposium is designed to indoctrinate and orient hospital commanders, base and post surgeons, legal officers, military police officers, et cetera, along the line of forensic sciences, to enable these personnel to know when and how to utilize the pathologist, and how to better aid and assist one another in forensic cases. (TIO, BuMed)

Military Medical Program at NMS. Approximately 275 Reserve Medical officers of the Army, Navy, Air Force, and Public Health Service attended a 2-week Military Medical Training Program at the U.S. Naval Medical School, NNMC, Bethesda, Md., during March. The Program, under the auspices of the Bureau of Medicine and Surgery and conducted by the School, dealt with medical aspects of special weapons, management of mass casualties, and medical problems posed by extremes of climatic and environmental stresses. Typical topics of discussion were: Thermonuclear, Biologic, and Chemical Warfare; Satellites, Astronautics, and Advances in Aviation Medicine; Psychologic and Heat Stress; and Disaster Control Medical Plans of the District of Columbia. Since its inception in 1948, 3730 Reserve officers have attended the various presentations of the Program. (PIO, NNMC)

New CPC Slide Sets Available. The Armed Forces Institute of Pathology, Washington 25, D. C., announces four new slide sets for loan: 58-60 Pulmonary Nocardiosis; 59-60 Acute Granulocytic Leukemia with Histoplasmosis Cytomegalic Inclusion Disease; 60-60 Tuberous Sclerosis; 70-61 Choanal Atresia.



Heart Disease in American Physicians. Analyzing 2587 responses to a questionnaire sent to a selected group of medical specialists—general practitioners, anesthesiologists, pathologists, and dermatologists in decreasing order of occupational stress—the author considered that the findings added confirmation to the growing belief that emotional stress of occupational origin is one of the more important etiologic factors in genesis of coronary artery disease among persons subsisting on a relatively high-fat diet. Distribution of hypertension was found to have no relationship to the prejudged stressfulness of the categories studied. Although the prevalence of coronary heart disease was almost three times higher among hypertensives than among normotensives, hypertension did not appear to be an important factor in this total experience. (H. Russek, Amer J Med Sci, December 1960)

Ischemic Heart Disease. In an extensive series of autopsy cases studied, the authors noted a quantitative increase in the degree of coronary atherosclerosis in adult Caucasian males over the past 25 years. Despite the increase, the relative frequency of coronary thrombosis associated with coronary atherosclerosis remained constant; it was noted only in the presence of advanced degrees of coronary atherosclerosis. The relative frequency of coronary thrombi appears to be uninfluenced by sex, hypertension, or unusual physical activity; it increases only with age. (D. Spain and V. Bradess, Amer J Med Sci, December 1960)

Poverty and Rheumatic Manifestations. Whereas susceptibility to rheumatic fever appears to have decreased in many countries as the standard of living has increased, the disease process is still able to manifest itself among the most underprivileged groups. The suggestion is made that the critical factor associated with poverty may be nutrition in early life, and that this may affect tissue reactivity of the patient to group A streptococcal infections. (A. Coburn, Amer J Med Sci, December 1960)

Role of Chrysotherapy in Rheumatoid Arthritis. Despite availability of steroids, the author considers that, judging from his experience with 213 patients over a period of 25 years, gold salts remain a favored form of therapy. Subjective and objective improvement sufficiently striking to convince himself and impress the patient was observed in 193 patients. Careful observation of the patient at all times is necessary to detect side reactions and prevent toxic effects; weekly urinalysis is a must. There are no withdrawal symptoms and the patient is not subjected to hormonal imbalance. (J. Allegretti, Postgrad Med, December 1960)

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**DENTAL****SECTION**Cervical Amalgam Restoration and its Failure

G. F. Kantorowicz. Royal Dental Hospital, School of Dental Surgery, London W. C. 2, England. D. Practitioner 10: 158-161, March 1960; abstracted in Dental Abstracts, December 1960.

Two hundred Class V restorations in patients seen for the first time at the Royal Dental Hospital School of Dental Surgery were examined. Only those restorations completed at least 6 months previously were included. A restoration with smooth surfaces, no pitting, and no subgingival or supragingival edges was regarded as satisfactory; all others were regarded as failures.

Only 55 of 200 restorations were satisfactory. The remainder showed marginal failure, pitting, secondary caries, or could be flicked out with the probe. The chief causes for failure were judged to be underextension, water contamination and lack of retention or condensation, and faulty finishing or polishing of the margins of the restoration, in that order.

Cavity preparation for Class V restoration must be carried out according to Black's principles with the gingival wall of the cavity in relatively caries-immune regions to avoid secondary caries and marginal failures. Neglected oral hygiene must be considered a predisposing cause for failure, and the patient should be instructed accordingly.

Faulty edges should be removed at the next visit with finishing burs, hand instruments, and sandpaper disks. The margins must be well polished. Water contamination and undercondensation are the main causes of pitting of amalgam. Water can be excluded from most cavities by the use of cotton wool rolls, matrix bands, or a rubber dam. Moisture can be a large factor in failure. Astringents usually are helpful in reducing marginal seepage. Ten percent zinc chloride, 50% trichloroacetic acid, or a strong solution of epinephrine applied to the gingiva with a blunt plastic instrument will stop marginal seepage and will remove the soft tissue from the cavity edge.

Condensation of amalgam on a convex surface is difficult. Use of the Dentatus amalgam condenser with the concave head yields a good result. The Tofflemire matrix holder with the "window" type of band is most suitable for this type of cavity. The window is cut so that it is a little smaller than the cavity to provide a firm wall against which the amalgam is condensed.

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### Flammable Liquid Storage

In several locations at naval activities —particularly dispensaries and laboratories—small amounts of flammable liquids or hazardous chemicals are often stored in ordinary refrigerators in order to reduce evaporation loss after the container seal is broken.

Even though kept at a low temperature, many of these hazardous liquids have an extremely low flash point and, therefore, are capable of giving off flammable vapors while within a refrigerator. In such a small confined space an explosive air-vapor mixture can be developed with a minute quantity of a flammable liquid. Low flash point type liquids in open containers will readily develop explosive concentrations. In addition, such liquids in apparently closed containers create a hazardous atmosphere by leakage of vapor from the container.

Explosions are often caused by ignition of the air-vapor mixture by electrical components of the refrigerators, such as the interior light switch or thermostat switch. Since a refrigerator containing flammable liquids can develop a hazardous atmosphere as defined by the National Electrical Code, it should be treated as a Class I location "wherein gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures." A domestic type refrigerator has been developed which is listed by the Underwriters' Laboratories, Inc., for Class I, Groups C and D hazardous locations as defined by the National Electrical Code. It is available in capacities of 4, 8, and 11 cubic feet.

Where it is not possible to discontinue such storage altogether, the quantity of flammables should be reduced to a minimum working supply and an approved explosion-proof refrigerator should be obtained. Minimum action that would alleviate the hazard in the interim would be to move the refrigerator outside the building and adjacent to a blank section of masonry wall if available.

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### Records Disposal

Good records management in a dental department provides files which are complete enough to yield essential information but not cluttered with out-of-date or nonrecord material. Nonrecord material (documents not officially prepared or received) should never become part of the official files.

Record material itself should be managed according to official retirement schedules set up by the originating agency. Forms disposition is also governed by chapter 23 of the Manual of the Medical Department. Noncurrent Dental Department records must be disposed of in accordance with current instructions (Navy Directives System Series 5212). These directives have been issued in an effort to reduce the space devoted to records either by



destruction or retirement to the U. S. Naval Records Management Center.

The importance of regular and systematic records disposal was brought to national attention when Congress passed Public Law 754. This law requires that every agency have a program to control the creation, maintenance, use, and disposition of records.

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#### Slide Study Sets on Loan

The U. S. Navy Dental School, National Naval Medical Center, Bethesda, Maryland, has available on a short term loan basis a slide study set on Non-Neoplastic Oral Lesions. The set consists of 25 microscopic slides prepared from specimens received in the Pathology Division of the Dental School and a 55-page syllabus in two sections. The first section is devoted to clinical notes which accompany each specimen when received for diagnosis. The second section contains the histologic description, diagnosis, and pertinent remarks for each case. The syllabus was prepared in this manner to encourage the user of the study set to make his own written description and diagnosis before referring to the histologic description and diagnosis in Section II.

Loan of the study set may be obtained by submitting a letter of request in the following form:

From: \_\_\_\_\_  
(name, rank, full address)

To: Commanding Officer, U. S. Naval Dental School (Code 7)  
National Naval Medical Center  
Bethesda 14, Maryland

Subj: Non-Neoplastic Oral Lesions; request for loan of illustrated lecture on

1. It is requested that I be granted the loan of the illustrated lecture Non-Neoplastic Oral Lesions for approximately two weeks.
2. It is requested that the period of the loan commence on, or about, \_\_\_\_\_ 196 , to expire not later than two weeks from date of receipt.
3. I will exercise due care in handling and stowing this training material and will return it in the original carton with the enclosed franked address labels attached at the expiration of the loan period.

\_\_\_\_\_  
(Signature)



### Officers Selected for Advanced Training

The following Dental officers have been selected for General Postgraduate Training at U. S. Naval Dental School, National Naval Medical Center Bethesda 14, Md., commencing September 1961: CDRs Joseph J. Hoyt, Frank A. Marmarose; LCDRs John T. Anderson, Robert E. Austin, Grover G. Beeler Jr., Kenton T. Bradley, Herbert C. Deaton, James D. Enoch, Erwin J. Heinkel, Edmund M. Holland, Norman K. Luther, Robert W. Mendel, Franklin R. Ruliffson, Robert E. Timby, Wm. G. Walker, and Wilton G. Woody; LTs Alfred O. Brault, Paul S. Coombs, Wm. F. Dowling, Clyde L. Fulcher, Kenneth K. Kaneshiro, Gordon E. King, James E. Klima, John S. Lindsay, Edwin E. McDonald Jr, Elgene G. Mainous, Wm. C. Moffitt, and Ralph E. Sand.

The following Dental officers have been selected for advanced training in specialties as indicated: Oral Surgery—CDRs Philip J. Boyne, Clifford H. Prince, and Ernest W. Small; LCDRs Charles S. Scruggs and Scott M. Smith. Prosthodontics—CDR Billie F. Outlaw and LCDR Ronald G. Granger. Periodontics—CAPT Frank Dobronte; CDRs Edwin R. Black and Joseph G. Hancock; LCDR James R. Elliott and LT Roy C. Corderman. Oral Pathology—CDR George H. Green. Dental Material Training and Research—LCDR Robert W. Longton.

### Repair Contract for Handpieces

The Bureau of Medicine and Surgery has completed distribution of the negotiated contract with Midwest Dental Manufacturing Company for repair of higher speed handpieces. Provisions of this contract are effective 1 March 1961 to 28 February 1962. With the exception of slight revisions in the cost of some job orders, the provisions of this contract are similar to previous contracts. The costs of all repairs are chargeable to local allotments only. Additional copies of this contract may be obtained from Chief, Field Branch, Code 42B, Bureau of Medicine and Surgery, 29th Street and 3rd Avenue, Brooklyn 32, N. Y.

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### Personnel and Professional Notes

RADM Schantz Granted Life Membership. RADM Curtiss W. Schantz DC USN, Assistant Chief, Bureau of Medicine and Surgery (Dentistry), and Chief, Dental Division, recently received a certificate and gold card for life membership in the Association of Military Surgeons of the United States. The life



membership was granted by the Executive Council for services rendered by RADM Schantz when he served as General Chairman, 67th Annual Convention, held 31 October through 2 November 1960 in Washington, D. C.

Royal Canadian Officers Visit Dental Division. LTCOL G. B. Shillington, Royal Canadian Dental Corps, and Wing Commander D. O. Coons, Royal Canadian Medical Corps, recently visited RADM Curtiss W. Schantz DC USN to discuss matters of mutual interest in training Dental officers and enlisted personnel of their respective services. The Royal Canadian Dental Corps and the U. S. Navy Dental Corps have enjoyed a close and mutually beneficial relationship for many years. Wing Commander Coons is attached to the Canadian Joint Staff in Washington, D. C., and LTCOL Shillington is Deputy Director, Canadian Armed Forces Dental Service.

Camp Lejeune Dental Society Organized. Charter for a proposed Camp Lejeune Dental Society was approved recently by Base Commanding General, MAJGEN Robert B. Luckey USMC. CAPT Charles T. Pridgeon DC USN, Base Dental Officer, presided over the initial meeting of the society. It was decided that permanent officers would not be elected, but that future meetings would be presided over by all command Dental officers on a rotational basis. CAPT Paul A. Moore DC USN, assigned to the base dental department, addressed the first meeting and presented a lecture on Amalgam Restorations. Attendance at the first meeting numbered 75 including civilian dentists from Jacksonville, Kinston, and New Bern, N. C.

The mission of the society is to provide professional advancement of military Dental officers through informal discussions and study of dental subjects and other appropriate topics. Establishing liaison and coordination with civilian dentists and exchanging knowledge and experiences should develop camaraderie among civilian and military dentists to advance the ideals of the profession. Membership in the society is open to all Dental officers of the Armed Forces on active duty within the Camp Lejeune area. The society hopes that civilian attendance will expand, thus furthering a greater exchange of ideas and knowledge.

Philippine Dentists Visit Ship. A group of Philippine Armed Forces and civilian dentists recently completed a tour of the USS HANCOCK, CVA 119, in Manila Harbor. Each dentist was presented with a souvenir booklet of the HANCOCK. The tour was arranged by CAPT F. K. Etter DC USN, Staff Dental Officer, Commander Naval Forces Philippines, and was conducted by CDR J. E. Corthay DC USN, Senior Dental Officer of the HANCOCK.

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Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget (19 June 1958).



**RESERVE****SECTION**Officer Hump Problem Besets Naval Reserve

The officer hump problem in senior grades which has been a trouble area in the Regular Navy has finally descended upon the Naval Reserve. During the next 5 years, the Navy will be forced to take corrective action in the grades of commander and captain in the Naval Reserve. Normal attrition from an active status by reason of voluntary retirement, failure to earn necessary points, resignation, or discharge will not be sufficient to prevent the Naval Reserve from exceeding its authorized strength in both grades.

Although minimum promotional opportunity to the grades of commander and captain has been reached, the large numbers of inactive Naval Reserve officers in an active status eligible for promotion will serve only to add to the severity of the hump problem.

Maximum Numbers Within Each Grade Established by Law. The Navy has long had on the law books restrictive ceilings for numbers of officers allowed within grades. The Armed Forces Reserve Act, later codified in Title 10, U.S. Code, provided that the Naval Reserve could have 150,000 officers in permanent grade in an active status. The law further provided that, for line officers, certain percentages would be allowed within grade.

The Secretary of the Navy was empowered to determine administratively the numbers of officers in the line and in the Staff Corps. Based upon planned mobilization requirements, the Secretary apportioned 120,000 of the over-all 150,000 to the line. The remaining 30,000 officers in an active status were further divided among the various Staff Corps.

Owing to an interpretation of the law, the Navy has remained within the over-all percentages within grade by counting only those active status Naval Reserve officers in permanent grade.

In the grade of commander, however, the percentage allowed was exceeded by promoting officers on a temporary basis. There was some justification for doing this inasmuch as the planned mobilization requirements after World War II and after the Korean incident were relatively high.

Officers in the grade of lieutenant commander in those days enjoyed a selection opportunity of 55% and higher to the grade of commander. At no time did the numbers of permanent officers within each grade exceed the percentages allowed, and the AFRA provision in the U.S. Code was not too much cause for concern.

Mobilization Requirements for Senior Officers Decrease. For the past 4 to 5 years, planned mobilization requirements to be levied against the Naval



Reserve, especially in the grades of commander and above, have reduced gradually to the point where the actual requirements are considerably below the strength of those allowed within grade.

At the present time, the mobilization need for senior officers is decreasing. On the other hand, the strength of active status Naval Reserve officers in senior grades is increasing at a rapid rate.

Officers who were initially procured during the early stages of World War II are now being promoted into the grades of commander and captain in ever increasing numbers despite a lowering of selection opportunity to these higher grades. The weight of sheer numbers threatens to exceed the limitations set by Congress even with the liberal interpretations previously employed in determining how many officers the Navy could have in an active status.

The Staff Corps has a similar problem, although the actual numbers involved are fewer.

Congress Amends Reserve Officer Personnel Act of 1954. In June of 1960, Congress enacted an Omnibus Amendment Act which was designed to help the various services administer their Reserve programs under the ROPA.

For the Naval Reserve officer, the amendment with the most far reaching consequences was a briefly worded statement which deleted the word "permanent" as it referred to numbers of officers allowed within grade in an active status in the Naval Reserve. With the passage of this law, the Navy could not exceed the already established numerical ceilings because officers count against the ceiling whether in a permanent or a temporary grade.

The strength of the Naval Reserve was thus set at 150,000 officers in an active status and this over-all number could be exceeded only when the planned mobilization requirement called for a greater number of officers. With decreasing mobilization requirements, especially in the senior grades, the possibility of exceeding numerical ceilings became extremely remote.

However, with passage of this amendment, the little used section of law in Title 10, U.S. Code, Section 5457, becomes a vital consideration. This section provides that percentages of officers of the line in respective grades in the Naval Reserve in an active status would be: Captain—1.5%, Commander—7%, Lieutenant Commander—22%.

As the Secretary of the Navy has stipulated that the 150,000 officers be split into 120,000 line and 30,000 staff, the numerical ceiling of line officers in the grade of captain was 1800 and in the grade of commander was 8400 officers.

It must be remembered that these ceilings were not new, but the requirement to remain within these limitations is new. The problem resulting from passage of the Omnibus (ROPA) amendments was most severe in the grade of commander, and the Navy was granted a grace period to reduce the size of the numbers now allowed.



If the 1800 line officer ceiling were not to be exceeded, the Navy would be forced to do one of the following: Either not promote any commanders to the grade of captain, or eliminate enough captains from an active status to accommodate a reasonable promotion opportunity to those commanders eligible for selection to the grade of captain.

From 1955 through 1958, 55% of those commanders eligible were promoted to captain. Commencing in fiscal year 1959, the Secretary prescribed a selection opportunity of 35% to the grade of captain and stated that this represented the minimum figure acceptable in maintaining a healthy officer cadre in the Navy Reserve.

The Navy elected the minimum promotion with necessary equivalent attrition from an active status as the only course consistent with continuing good morale in the Naval Reserve officer community. With this decision came the immediate problem of creating enough room to accommodate a 35% selection of those eligible for promotion to the grade of captain for fiscal year 1961. (The Naval Reservist, March 1961)

(To be continued in the next issue)

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#### Aerospace Medical Association Meeting

The Aerospace Medical Association will conduct its annual meeting at the Palmer House, Chicago, Ill., 24 - 27 April 1961. The scientific program for the meeting will include three and one-half days of sessions on subjects related to the practice of aviation medicine, research and education, and development, testing, and operational application. Eligible inactive Naval Reserve Medical Department Officers may earn one retirement point credit per day for attendance at these sessions provided they register with the military representative present.

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#### Military Symposium at APA Convention

The American Pharmaceutical Association will conduct its annual meeting at the Sherman Hotel, Chicago, Ill., 24 - 28 April 1961. The military sections will convene at noon on both Monday, 24 April in the Louis XVI Room, and Wednesday, 26 April in the Bal Tabarin Room. Eligible inactive Naval Reserve Medical Department officers may earn one retirement point credit for attendance at each section provided they register with the military representative present.

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## SUBMARINE MEDICINE SECTION



### Painstaking Examination for Submarine Training Means Men and Money Saved

"Doctor, there is a man here for a submarine physical." This announcement has never evoked huzzas from the Medical officer to whom it was directed. Carefully doing this physical examination—or even a thousand more like it—will not provide you with a discovery to report in a medical journal, nor will it facilitate your certification by any medical specialty board. We may conclude, therefore, that it is unimportant how this physical examination is performed. Wrong. By being slipshod, you can make this examination serious to the Navy. If everyone contributes a little dereliction, the Navy can be deprived of four submarine crews. This happened during 1960. For those interested in the opportunities for individual achievement, here is another example. If you are in the right place with the right examinee, by just a moment's carelessness you can cause the Navy to waste several hundred dollars. How? Read on.

BUPERSINST 1540.2C requires the Commanding Officer of an applicant for initial submarine training to state that he is physically qualified for submarine duty in accordance with Art. 15-29, MMD at the time he forwards his request to BUPERS. Article 15-29, MMD also provides that all personnel reporting to the Submarine School shall again be given a complete physical examination on arrival. During the past year, 5998 such examinations have been conducted by the Naval Medical Research Laboratory. A total of 412 candidates (about 7%) were found not to meet the current physical standards for submarine duty. The principal causes for rejection of candidates upon their arrival at New London were: (a) defective vision (visual acuity), (b) defective color vision, (c) psychologic unadaptability, and (d) pulmonary disease or disability.

At first glance, it might appear reasonable to content ourselves with a system that is 93% efficient. This smug complacency is shaken, however, when we examine three facts:

(a) The 412 vacancies in the school quota were not filled. The attrition rate at the Submarine School is about 9%. In substance, then, quota vacancies of 412 resulted in 375 fewer graduates. Four submarines can be manned with this number.



(b) The total cost of needlessly transporting these men to and from New London amounted to approximately \$90,000.00.

(c) In 75% of the cases the situation was avoidable.

There is a human side to this situation which we, as physicians, should be mindful of. Most men give considerable thought to the matter before volunteering for submarine duty. By the time they depart for New London they have usually communicated their decision to their parents, wives or sweethearts, and friends. If a man is rejected at New London, he must now go back to these same individuals and tell them that "he didn't make the grade." This cannot be done without sustaining a certain amount of emotional trauma.

A general service Medical officer cannot be expected to determine whether a candidate is psychologically adaptable for submarine duty. It is also recognized that the provisions of Art. 15-29 are not sufficiently explicit concerning auditory and respiratory system requirements. A manual change is being proposed. In future issues of the Medical News Letter, articles will appear concerning psychologic demands, auditory requirements, and chest examinations. These, however, are not the current problem areas.

Nearly 4.5% of the candidates reporting to New London did not meet the visual standards for submarine duty. In many, this was not merely a minor deviation from the standards. Men with visual acuity as low as 20/400 and 20/800 recorded in their health records have arrived at the Submarine School. Similarly, candidates whose records indicate that they have failed the Farnsworth Lantern test have reported with an entry proudly proclaiming that they are "physically qualified for submarine duty." Due attention to the matter of visual acuity and color perception on the part of Medical officers conducting the preliminary physical examinations could have reduced the number of rejections from 412 to 142. It is only hoped that the Medical officer who is so lax that he will sign a statement certifying that a man is physically qualified for submarine duty, without looking at his health record, is not also so disinterested that he does not read the Medical News Letter.

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#### Quota Vacancies in Submarine Medicine

The next class in submarine medicine will convene on 4 September 1961 at the U. S. Naval School, Deep Sea Divers, Naval Weapons Plant, Washington, D. C. This first part of the course will consist of 8 weeks of instruction in underwater physiology and diving. The remainder of the course will be conducted at U. S. Naval Submarine Base, New London, Conn. There remains only a single vacancy in the conventional (30-week) submarine medicine course. Currently, there are six quota vacancies in the nuclear (40-week) submarine medicine course. Medical officers considering submarine medicine are urged to apply promptly. BUMED INST 1520.3C applies.





## PREVENTIVE MEDICINE

### Survival in the Jungle from an Entomologic Standpoint

Survival technics should be a part of the basic military skills of Armed Forces personnel. Modern travel and combat increases the likelihood that an individual may become isolated for many days or weeks while making his way back to friendly forces. During this period he may be exposed to diseases borne by flies, mosquitoes, lice, ticks, and mites, such as typhoid fever, the dysenteries, malaria, typhus, and yellow fever. Therefore, it is mandatory that every means be utilized to avoid bites of mosquitoes and other insects and contamination of food by flies.

The following general precautions should be adhered to:

- a. Keep flies and other vermin away from food and drink.
- b. Cover the body to reduce exposure to insects, especially after sundown and during the night.
- c. Take suppressive drugs, if available, to prevent malaria.
- d. Avoid close contact with natives. Small crowded native homes are often infested with lice, bedbugs, and other disease-bearing arthropods. Never lie down and sleep in such homes.
- e. Keep the body clean and free of lice.
- f. Remove ticks from the skin promptly.

Individual precautions against specific insects require a knowledge of potential dangers that may be encountered. Mosquitoes, for instance, transmit human malaria, dengue, yellow fever, filariasis, and encephalitis. Specific precautions against mosquitoes include:

- a. Camp on high ground away from swamps.
- b. Wear all clothing, especially from dusk to sunup. Gloves, boots, leggings, and veils are of great value.
- c. Sleep under mosquito netting if available, tucking it in and refraining from bodily contact with the net. If not available, use coconut palm cloth, leaves, or other makeshift cover.
- d. Tuck trousers into tops of socks or shoes.
- e. Wear mosquito head net and gloves, or build a smudge fire, or otherwise produce heavy smoke to drive the insects away.



Avoidance of Specific Organisms				
ARTHROPOD (Distribution)	GENERAL CHARACTERISTICS	HABITS	IMPORTANCE	PROTECTION
<u>FLEES</u>				
Blackfly (Buffalognat). (Worldwide; worst in temperate regions.)	Tiny, blood-sucking, hump-backed flies.	Diurnal; bites in shade or partial shade.	Scratching infects bites. Bite transmits filarial worms (Onchocerciasis) in Africa, Mexico, & Central America.	Avoid shade; protective clothing.
No-see-um, punkie, sandfly; Culicoides. (Wide tropical & temperate distribution.)	Small, slender, blood-sucking gnats.	Bites chiefly in evening or early morning, around hatband, belt-line, shoe tops, other tight fitting areas.	Extremely irritating bites causing nodular inflamed swellings itching for days or weeks.	If abundant, move on; often local, seldom more than $\frac{1}{2}$ mi. from breeding area.
Sandfly, mothfly, owlfly; Phlebotomus. (Worldwide, tropical & warm climates except E. Indies & Australia.)	Tiny, dark color; bodies & wings densely covered with hairs.	Feeds at night; hides by day.	Vicious biter; inflamed lesion; pruritis; nausea; transmits sandfly fever, leishmaniasis (kala azar & Oriental sore) Oroya fever.	Pass through mosquito netting. Seldom fly over 10 ft. above ground; dislikes air currents. Can be avoided.
Eye gnat. (U.S., American tropics & other parts of world.)	Small; dark body; legs & ventral abdomen yellow.	Hovers about eyes by day; no bite, but rasping lesions may become infected.	Mechanical carrier of eye infections & various skin & mucous membrane diseases.	Goggles; repellants.
Deerfly, horsefly. (Worldwide.)	Large, stout body; usually light color.	Diurnal where there are hoofed animals; strong flier.	Blood-sucking vector of Loa-Loa in Africa (esp. Congo); tularemia in U.S.	Protective clothing.
Tsetse Fly. (Part of tropical Africa, Southern Arabia; not in Egypt, Algeria, Libya, Morocco.)	Medium—from housefly to blowfly size; mouthparts protrude forward like bayonet.	Diurnal; bites in shade. Normally feeds in open areas; breeds in thickets, brush, forest canopy.	Transmits Gambian & Rhodesian sleeping sickness.	Chemoprophylaxis; avoid infested areas; protective clothing.
Screwworm fly. (Americas; Southern Asia.)	Dark, shiny, blue-green blowfly; 2x size of housefly; 8 stripes on back; reddish-yellow face.	Diurnal flyer.	In exposed daytime sleeper insect deposits eggs in wounds, nostrils (esp. if irritated by colds); larvae burrow into tissue.	Cover face and open wounds when resting in daytime.
Blowfly. (Americas, Africa, India, Australia, E. Indies.)	Similar to screwworm fly; dark metallic green or blue abdomen.	Diurnal; larvae feed on carrion, garbage, excrement.	Annoyance.	Protective clothing.
Bot Fly (Americas; African tropics.)	All about same size; smaller than honey bee; robust; strong flyer.	Diurnal.	Larvae bore into skin producing painful swelling like boil; may cause cutaneous myiasis.	Frequent applications of wet tobacco kill larvae; can be expressed.
<u>FLEAS</u>				
(Worldwide - various species; tropics & subtropics.)	Small, wingless, hard body, flattened from side to side; jumping legs.	Feeds frequently; does not remain on host.	Transmits plague, endemic typhus (Murine); severe skin irritation; chigoe flea burrows between toes, under toe nails, in tender parts of feet.	Tight fitting boots or leggings; Chigoe must be removed with clean needle & wound sterilized & dressed.



## Avoidance of Specific Organisms (Contd.)

ARTHROPOD (Distribution)	GENERAL CHARACTERISTICS	HABITS	IMPORTANCE	PROTECTION
<u>TICKS</u>				
(Worldwide; tropics & subtropics)	Flat, oval, sac-like wingless arthropod; adults have 8 legs; hard wood tick & soft tick.	Along animal paths, trails, roads in shrub covered areas.	Transmits Rocky Mountain Spot- ted fever, relapsing fever, typhus; bites irritating & may cause paralysis.	High shoes, boots, leggings, sacks pulled over pants. Inspect body frequently; promptly and gently re- move tick. <u>Never</u> forcibly remove or mash tick on skin. Hold lighted cigarette close, or cover with saliva, alcohol, gasoline, kerosene, or iodine to loosen. If head remains imbedded remove with sterilized knife point or needle.
<u>MITES</u> (Chiggers)				
(Worldwide.)	Same shape as ticks; tiny; adults have 8 legs, immature larvae 6.	Free living & parasitic forms; generally, in- fested areas shaded with high humidity. Hair follicle mites live deep in follicles & sebaceous glands.	Mild dermatitis; pruritis from feeding; grocers' itch. Trans- mits scrub typhus (tsutsuga- mushi); rickettsial pox; scabies.	Skin & clothing repellants; miticide (benzyl benzoate for scabies, ben- zene hexachloride in vanishing cream) soap & water bath; boil underclothing or expose to direct sunlight for a few hours.
<u>LICE</u>				
(Worldwide; less abundant in tropics.)	Tiny, wingless, flat- tened from top to bottom; no jumping legs.	Lives under clothes on body.	Bites cause rosy swellings; scratching causes scarring & bronzing of skin (vagabonds disease). Transmits epidemic & murine typhus; relapsing fever; trench fever.	Avoid huts and personal contact with natives; avoid scratching; louse powder; soap & water bath; boil or expose clothing to sun for few hours.
<u>SPIDERS</u>				
(Worldwide.)	Head & thorax con- solidated; abdomen; 8 legs.	Feeds on insects & small animals; pounces on victims; lives in webs; hides in stumps, lumber, ground holes, etc. All poisonous types dark color with white, yel- low, or red markings.	Most are harmless—few bite. Black widow & tropical types dangerous; bite when disturbed.	Avoid contact; do not place fingers or arms in areas of poor visibility.



## Avoidance of Specific Organisms (Concl.)

ARTHROPOD (Distribution)	GENERAL CHARACTERISTICS	HABITS	IMPORTANCE	PROTECTION
<u>SCORPIONS</u>				
(Southern U.S.; tropics, & subtropics.)	Similar to spiders; normally much larger; 2 stout pincer-like claws in front of 4 walk- ing legs; terminal ab- domen long & narrow, curved spine at tip.	Hides by day under stones, loose bark, debris, in shoes, cloth- ing, bed covers, towels Forages for food at night.	Stings have single penetration point, inflamed, hard, with lymphadenitis; throbbing, aching pain; ascending motor paralysis; fever.	Antivenin. Avoid scorpion hiding places; shake out clothes. Cold compresses or mud; coconut meat compress in tropics.
<u>CENTIPEDES</u>				
(Widespread; tropics, subtropics, temperate.)	Worm-like, flattened body; many jointed legs; up to 10 in. long.	Hides by day under stones, rubbish, leaves, etc.; forages at night. May take shelter in clothing.	Most are harmless; painful bite only when handled or threatened— in self defense.	Same as above—no antivenin.
<u>BEEES, WASPS, HORNETS</u>				
(Worldwide.)	Familiar stinging insects.	Easily aroused when nests are disturbed.	Multiple stings dangerous; some tropical ants sting severely & attack in numbers.	Avoid nests; if attacked, plunge through dense brush or undergrowth. If stung, scrape off bee stinger with knife. Mud helps relieve pain; leaves of climbing hemp weed good antidote (found near streams, swamps, & sea- shore of America, Africa, & S. Pa- cific). Smoke smudge stupifies bees; can then safely take honey with covered head & hands.
<u>ANNELIDA (Distribution)</u>				
<u>LEECHES</u>				
(Borneo, Philippines, Australia, S. Pacific, S. America.)	Flattened; worm-like; sucker at each end.	Blood sucking animals found in fresh water.	Bites cause discomfort, loss of blood, may be followed by in- fection. May be dangerous if swallowed in drinking water.	Loosen by touching with lighted cigarette, match, or moist tobacco. Trousers inside boots. Avoid face in water when drinking; leech may get in nostrils.
<u>PLATYHELMINTHES (Distribution)</u>				
<u>FLUKES, FLATWORMS</u>				
(Tropical America, Africa, Asia, Japan, Formosa, Philippines, other Pacific Islands.)	Too small to be noticed.	Sluggish fresh water.	Peneurates skin when drinking or bathing in infected waters; feeds on RBC; invades bladder & bowel; Schistosomiasis.	Avoid bathing or swimming in sus- pected water, especially where snails abound.



f. Use mosquito repellent, twelve to fifteen drops rubbed between the hands and spread evenly over exposed skin; if not available, smear mud on face and hands, especially before going to bed.

g. Take antimalaria tablets according to directions as long as they last.

h. Do not remove clothes, swim, or bathe after sundown.

The precautions used against mosquitoes are generally effective against flies. Repellent should be a standard traveling companion and used freely. Any fly capable of piercing the skin must be regarded as a potential vector of disease. Those that do not bite—such as the house fly—carry disease organisms on their mouthparts, feet, bodies, and in their feces. In addition, they may lay eggs on skin injuries with the resultant young causing severe irritation (myiasis).

Most insects have food value and are palatable if prepared properly. They may be used to provide stock for soups or to add protein to stews. White grubs of palm weevils and other wood infesting beetles are highly prized by natives. They are often as large as your thumb and may be found in rotting wood and around freshly cut areas on palm trees. They are quite palatable when split and broiled over the coals of a fire; they have a somewhat oyster-like flavor. The natives usually eat them without cooking. Grasshoppers and cicadas with legs and wings removed may be toasted on the end of a stick. The pupae and eggs of ants are edible, but difficult to collect in quantities. Winged termites are also edible after removing the wings. They migrate in great numbers after the rains. (CAPT John D. DeCoursey MSC USN, Head, Vector Control Section, PrevMedDiv, BuMed)

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#### Ticks: Habits, Biology, and Control

Roger O. Drummond, Entomology Research Division, U. S. Department of Agriculture, Kerrville, Texas. Pest Control Magazine, Vol. 28: 9-14, December 1960.

Ticks, small though they may be, are one of the major pests in the United States because of (1) injury caused by their bite, (2) their ability to spread disease, and (3) paralysis caused by the toxin they inject when feeding.

All ticks are blood-sucking arthropods. If care is not used in pulling off an attached tick (certain species), its mouth parts remain imbedded in the skin; thus a condition is present for a possible secondary infection.

These arthropods are notorious vectors of such important diseases as Rocky Mountain spotted fever, relapsing fever, American Q fever, and tularemia. An important aspect in their relationship to disease is their



reproductive potential. One infected female can lay up to 5000 eggs and the disease may be passed to each of her progeny.

A coagulation mechanism in blood enables the victim to resist a blood sucking parasite. For a tick to feed, this mechanism must be stopped so that the blood may flow freely. To accomplish this, the pest injects a material of an anticoagulant nature through its mouthparts. If the toxin is injected near a nerve at the base of the skull or spine, it can cause a paralysis that begins in the limbs of the victim and moves slowly through the body. In the Rocky Mountain areas such a result is quite common in goats, sheep, and occasionally in man. If paralysis continues, death will result. With early treatment, however, recovery is usually rapid. The tick and its mouthparts must be removed.

There are two principal classes of ticks: Soft (*Argasidae*) and hard (*Ixodidae*). It is reasonably easy to distinguish between them. The soft ticks are often round, have a leathery cuticle, no hard areas on the dorsal surface, and mouthparts are not visible from above. The hard ticks are oval, have a smooth cuticle, either large or small hard areas (shields) on the dorsal surface, and protruding mouth parts that are visible from above.

Most of the soft ticks are parasites of bats and are found in caves and other habitats. Certain species are of medical importance. The fowl tick (*Argas persicus* (Oken)) attacks chickens, geese, pigeons, other domestic and wild birds and, occasionally, animals. It is fairly common in the southern states. Females hide by day and feed by night from 5 minutes to 2 hours. The little seed or larval ticks feed for 5 to 10 days. Adults can live for 3 years without a blood meal.

The most effective means of control is to treat the premises, especially the hiding places; thorough coverage of walls, ceilings, and floors is necessary. One percent malathion can be used inside at the rate of 1 to 2 gallons per 1000 square feet. Outside areas (trees and old roosts) can be treated with sprays—3.0% malathion, 0.5% chlordane or toxaphene, or 5.0% DDT. Care must be taken not to contaminate food, water, birds, fields, pastures, or woodlands being grazed by animals. The directions on the label of an insecticide should enable the user to avoid contamination of meat and/or milk.

Hard ticks are probably the most common in the United States. They are divided into three groups: one-host, two-host, and three-host. The one-host ticks remain on a single animal to the adult stage, leaving the host to lay eggs. The two-host ticks develop on the original host to the nymphal stage; then they leave to molt to adults before returning to another host for a final blood meal. Three-host ticks move three times after engorgement: as larvae, nymphs, and adults.

The American dog tick is a commonly found hard tick which attaches to dogs, squirrels, deer, cows, racoons, and other mammals. One female can lay from 4000 to 6500 eggs. This tick is rarely found in homes. Control



is usually directed toward the pests on the ground, lawns, and along paths in woods. Sprays of DDT, toxaphene, chlordane, or dieldrin applied at 1 to 4 pounds of toxicant per acre, and with lindane at 0.2 to 0.4 pounds per acre may be used. Dusts containing 10% DDT, 5 or 10% toxaphene, chlordane, or dieldrin, or 1.0% lindane applied at the same rate of toxicant per acre as sprays are also effective. The same precautions are required.

The brown dog tick is probably the most widely distributed tick in the world. It attacks rabbits, goats, sheep, and ground feeding birds, as well as dogs. They may be found throughout a house, but rarely bite a human being. Control requires treating dogs and infested premises. Recommended for dogs are washes containing 2 ounces of derris powder (3.0% rotenone) to 1 gallon of water, 0.5% malathion, 1.0% DDT, or 0.5% lindane. One-half strength should be used in dips. Dusts containing 3.0 to 5.0% rotenone, 5.0 to 10% of DDT, 4.0 or 5.0% malathion, or 1.0% lindane are also used. These treatments should be repeated every 3 to 4 days.

For infested premises control should be obtained by thorough coverage with sprays containing 5.0% DDT, 2.0% chlordane, 1.0% lindane, 2.0% malathion, or 0.5% dieldrin. Resistance to chlordane has been reported.

NOTE. A venomous tick (*Ornithodoros coriaceus* Koch.) causes concern in certain areas in California. Locally it is known as the "pajaroello" and is much feared. Apparently pain ensues rather suddenly following partial engorgement of the tick. A bright red spot indicates the point of attachment and is surrounded by an irregular purple ring about three-fourths of an inch in diameter. In some cases, severe swelling has been noted. Plum colored, spherical eggs are laid during May, June, and July. More than 1000 eggs have been recorded from one female. Larvae attach readily to rabbits. The immature tick molts five times, seeking a new host after each molt.

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#### Precipitates in Typhus Vaccine

Typhus vaccine is prepared from the yolk sacs of embryonated eggs inoculated with a standard strain of *Rickettsia prowazeki*, the etiologic agent of epidemic typhus fever. After harvesting, the rickettsiae are killed by the use of formalin; most of the egg material is removed and the inactivated material becomes the vaccine.

The final product which contains rickettsial bodies and a certain amount of insoluble yolk sac material is a turbid preparation. In the past, certain lots of typhus vaccine have been highly purified so that the resulting product was clear, but such highly purified preparations have been found to be less antigenic than the more crude preparation. The intended inclusion of particulate material in the bottles has resulted in a large number of



complaints from the field referring to this fact.

There have been no reports of adverse reactions in people who have received this vaccine. Many lots, produced by several manufacturers, have been examined in the laboratory; very few bottles have been found which were not satisfactory for use. On several occasions local laboratories have made smears of the vaccine and found material taking the gram stain which has suggested the presence of staphylococci; careful laboratory studies have consistently failed to confirm contamination by living organisms.

Current typhus vaccine is a turbid preparation and will develop a sediment on the supply shelf. This sediment—which may be somewhat yellowish in color—should be dispersable by vigorous shaking or by pumping the vaccine with a syringe and needle. If it does not disperse into a homogeneous suspension, the bottle of vaccine should not be used and appropriate administrative measures should be instituted. (Communicable Disease Branch, PrevMedDiv, BuMed)

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### Neurologic Injuries from Trampolines

Last fall, acrobatic tumbling on the trampoline, a canvas mat supported by springs within a steel frame, became a very popular pastime with children and young adults. The device was invented in the early 1930's by an Iowan and remained a gymnastic device until recently when outdoor trampoline centers were built in the West and the fad spread across the country.

There is no question but that there is a definite hazard when there is no training in use of the trampoline, and there are dangers when there is no supervision. Everyone should have a little instruction before trying it. Back injuries are possible if the jump is made improperly. In the Journal of the American Medical Association (November 26, 1960), there is a report of five cases of neurologic injury. All but one of the injuries resulted from backward somersaults imperfectly executed by persons unskilled in gymnastics. Acute cervical spine flexure led to quadriplegia in 3 patients followed by death in one instance. One accident resulted in a fractured skull. In only one of these cases was the injury transient.

Certain regulations for commercial trampoline centers are suggested in the article; public health officials and local medical authorities are asked to take the initiative in application and enforcement of these regulations. (Commonwealth of Virginia Department of Health, Bureau of Communicable Disease Control)

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### Danger of Outbreaks of Disease in Congo

There is no doubt that the Congo is threatened to varying degrees with outbreaks of such endemo-epidemic diseases as smallpox, plague, malaria, sleeping sickness, yellow fever, tuberculosis, and yaws, all of which had been kept under control for a number of years. It is estimated that over 80% of the population had been immunized by primary vaccination and re-vaccination; however, there were still between 3000 and 4000 cases of smallpox a year, the majority being of the modified type (alastrim). There is a real danger that migrations now taking place as a result of tribal conflicts may cause the disease to spread.

Malaria control measures in the Congo have been confined to insecticide spraying and chemoprophylaxis; there had been no malaria eradication program. About one million new cases of malaria have continued every year with no decline in prevalence during the last 5 years, though malaria control seems to have been quite efficient in the urban areas. There is now a real danger that the disease may spread to those areas unless active preventive measures are resumed. (WHO Chronicle, February 1961)

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